

Th. Scot

M. D., 1930.

T H E S I S

On

FACTORS INFLUENCING THE HEALTH

of the

PRE-SCHOOL CHILD.

Presented by

BESSIE RUSSELL MACKENZIE,

M.B., Ch.B., D.P.H.

-O::O-



INTRODUCTION.

"It is grossly uneconomic to allow the health and stamina of infants to deteriorate till 5 years of age and then to spend large sums of money in trying to cure them between the ages of 5 and 15."

The above passage occurs in a joint circular issued in December, 1929, by the Ministry of Health and Board of Education to Local Authorities, and, were one necessary, this extract would prove an ample excuse for my choosing the factors influencing the health of the pre-school child as a subject for the M.D. thesis.

Certain periods of the child's life are at present well supervised by the Authorities and what is done for the health of the child during these periods may be briefly summarised as follows :-

ANTENATAL

The health of the child in utero is cared for by giving attention to the Expectant Mother. To this end there are now established in almost every town Antenatal Clinics, where mothers may be kept under skilled medical supervision during the whole of their pregnancy. Debilitated conditions are attended to and special care is given to the teeth. Complications

of pregnancy are carefully watched for and any pelvic disproportions which might result in difficult labour with its toll of still births and birth injuries are dealt with. If the mother is found to be suffering from venereal disease, there are special venereal disease clinics available for treatment and if the treatment is instituted sufficiently early in pregnancy a healthy child may be expected.

AT BIRTH

There is now a stringent law forbidding any unqualified person to attend a woman in childbirth unless in great emergency. On account of this the handy-woman is fortunately gradually disappearing from our midst.

Local Authorities are now empowered to provide municipal maternity beds for the use of those mothers whose labour is likely to be complicated or whose home conditions are overcrowded or unsuitable.

FROM BIRTH TO 2 YEARS

This period of the child's life is usually well cared for. The two important supervising agents are the Welfare Centre and the Health Visitor. Welfare Centres (Municipal or Voluntary) are now practically universal in towns all over the country. To these Centres children may be brought as soon as

possible after birth. They are weighed and examined at intervals by Medical Officers with special experience in diseases of children. Advice is given to the mother in feeding and general management. Breast feeding is of course encouraged, but where this is impossible artificial foods may be purchased at a reduced price. Minor ailments are usually treated at these clinics but any ailment of a more serious nature is referred to a private practitioner. Health visiting is carried out in the homes by trained nurses. In the Urban District of Willesden, where I am at present A.M.O., the Health Visitor visits every registered birth on the 10th day and thereafter every three months during the first year and every six months during the second year. These visits are made more frequently where the child is ailing.

AT SCHOOL

The child enters school at the age of 5 years and at once comes under the notice of the School Medical Officer at his first medical inspection. Any defects are noted and the parent is advised to get treatment. A system of "following up" in the homes by the School nurse after these inspections is an important factor in the scheme of the School Medical Service. During the child's school life three routine medical inspections

are made - one at 5 years, one at 8 years, and one at 12 years. Minor ailment clinics are established to deal with cases which would otherwise probably go untreated, and at these clinics also the seeds of more serious disease are often detected. Eye clinics and dental clinics are available for school children, and systematic dental inspections are carried out in the schools. Facilities for testing the immunity of Scarlet Fever and Diphtheria and prophylactic inoculations for these diseases are now provided by many local authorities. In some towns Rheumatic Supervising Centres have been established and very valuable work is being carried out. Then there is also provision for children of School age who owing to some physical or mental defect fall below the standard of their fellows. Physically defective children may be admitted to special schools, where they attend until the age of 16. The curriculum is adapted to suit each child and at the same time every facility is given for the child to receive treatment for his defect. They are trained for some work which later may allow them to earn a living. Schools for Mentally Defective Children are also established and these children are educated so far as is possible and taught to live hygienic lives and if possible they learn a trade.

Special Schools are also provided for deaf, blind, and epileptic children.

There is a gap of three years between 2 and 5, during which the child receives very little attention from the Authorities. During this period the Health Visitor only makes two routine visits to the home - one during the third year and one during the fourth year. Even these visits may be resented by the parent, and in that case the Health Visitor has no right of entry, but must rely on her tact and common sense if she is to gain admission and be allowed to give any assistance to the child. Also although the Health Visitor is often able to give valuable advice to the mother, she is not a qualified practitioner, and is not able to make a systematic medical examination which might reveal the onset of some departure from the normal. The Welfare Centre is still open to the child during this period from 2 - 5 years, but often when he has got his full dentition and seems to be progressing well the mother thinks there is no further need for medical advice, and so she does not bother to return to the Centre. Another baby may have appeared and her hands are now fully occupied with the new arrival or she may not feel strong enough for the effort entailed in bringing two or more children to the

Centre. With an increase in the family also bus and tram fares often become a consideration. The popularity of Welfare Centres tends to increase, and the attendances are often so large that the medical and nursing staff may not have sufficient time to deal with the toddlers and must perforce give their attention to the more pressing needs of the new babies. If the parent will not bring the child to the Centre during this period of his life and if visits from the health nurse are refused, the only other person likely to detect anything going wrong is the family doctor. In most cases, however, the busy general practitioner has no time to visit apparently "well" patients. Among the more well to do classes it is still the custom only to summon medical aid when some definite ailment has presented itself, while among the poorer classes the economic question of meeting fees is all supreme.

If, however, statistics can be believed, it is just this period of the child's life from two to five years which is the most fatal, the conditions giving rise to the highest death rates being :-

- (1) Acute Fevers - Scarlet Fever, Diphtheria,
Measles and Whooping Cough.
- (2) Acute Lung Conditions.
- (3) Tuberculosis.
- (4) Bone Diseases
- (5) Rheumatic and Heart Conditions.

The following figures from the Registrar General's Report for 1928 give an idea of the heavy mortality from some of the above conditions during the pre-school period. The table also shows the contrast between the number of deaths from certain diseases during this period and the number of deaths from the same diseases during the 0 - 1 year and 5 - 15 years periods.

Disease	Number of Deaths in 1928.		
	0-1	1-5	5-15
Measles	914	2,881	454
Whooping Cough	1,397	1,469	100
Diphtheria	135	1,294	1,565
Scarlet Fever	16	236	231
T.B. of Nervous System	357	970	741
T.B. of Intestines and Peritoneum	128	325	215
Other forms of T.B.	225	644	1,210
Bronchitis	2,309	770	143
Pneumonia (all forms)	6,385	5,009	1,214
Other diseases of the Respiratory System	199	298	169
Heart Disease	8	64	822
Rheumatic Fever	2	42	513

Inasmuch as many of the above conditions are preventable, or at least partially preventable, a proper study of this period is just as important or even more important than that of later periods.

... ..

FACTORS INFLUENCING THE HEALTH OF THE PRE-SCHOOL CHILD

The chief factors influencing the health of the pre-school child may be discussed under the following heads :-

(1) HEALTH OF THE EXPECTANT MOTHER

Anaemic and debilitated conditions in the mother during pregnancy may certainly have a marked effect on the health of the child. This debility may be due to overwork, lack of food or lack of the proper kind of food. Again the mother may be weakened by too frequent child bearing. Pyorrhoea in the expectant mother is a cause of much ill health and may be reflected in the malnutrition of the child. Other important complications occurring during pregnancy which may affect the health of the child are albuminuria and haemorrhage. A premature labour, from whatever cause, may result in a weakly infant who never quite reaches the normal standard of nutrition. Venereal disease in the mother may have far reaching effects on the child. Syphilis usually gives rise to 2 or 3 still births and then a full time child is born, to all appearances healthy, but only too soon likely to develop symptoms of the congenital disease. Untreated gonorrhoea in the mother is liable to give rise to eye defects and is responsible for many of the children

in our blind schools. Mongolian idiocy is said by some authorities to be the result of defective nutrition of the child in utero - perhaps from infection such as gonorrhoea.

(2) TYPE OF BIRTH

Certain cases of mental deficiency in the small child may be traced back to a difficult labour. Injury to the brain during labour may also show itself later in the form of birth palsies with their great disability and distressing deformities. The special schools for mentally and physically defective children can produce many such pathetic cases.

(3) ATTENDANCE AT THE TIME OF BIRTH

Incompetent attendance at birth may certainly have a far reaching effect on the health of the child. Cases of crippling may result from unskilful instrumental delivery and cases of Ophthalmia Neonatorum may develop through lack of careful attention to the child's eyes at birth.

(4) TYPE OF FEEDING

This is probably one of the most important factors influencing the health and nutrition of the pre-school child. Breast milk is conceded by all authorities to be the perfect food for the child, containing as it does all the necessary elements

for growth and nutrition. We have no real substitutes for mothers' milk - only expedients. Unfortunately in these days of unemployment it only too often happens that the mother has to go out to work as soon as possible after her confinement. On account of this breast feeding has often to be given up. Unless this period of artificial feeding is carefully supervised it may be followed by such conditions as malnutrition, tuberculosis and rickets. Although this last disease is also associated with such factors as lack of sunshine and fresh air and want of general care, unwise feeding goes a long way towards its production. The evidence of this disease in the pre-school child is usually seen in a generally stunted growth. Very often a child of 3 years measures 4 to 5 inches less in height than a normal child of the same age. The head is large, the ribs beaded and the chest frequently deformed. The abdomen is distended and the muscles weak and flabby. Deformities of the spine and of the extremities such as knock-knees and bow legs are often present.

Tuberculosis in young children tends to affect the lymphatic glands most commonly and is not so frequently seen as a pulmonary condition. A child is not born with tubercle but becomes infected by a human being suffering from open tuberculosis or from the cow through the vehicle of milk. Tuberculosis

of the bones is most common between the ages of 3 and 8 and children under 5 years are specially liable to tubercular meningitis.

One of the common faults of feeding about this time is for breast or bottle feeding to be continued too long and the child not encouraged to use its jaws. Dr. Brooker Mills in an article published in the Medical Journal & Record for 1926 on the Normal Infant and Child states that in his opinion "the use of the bottle for more than one year from the time of starting is one of the three most common causes of enlarged tonsils and adenoids, the other two being (1) Thumb Sucking, and (2) Whooping Cough."

The feeding of the child during the 2-5 period is no less important. Irregular meal times; bits between meals; lack of vitamin containing foods and an excess of sugar and starches are probably the most common faults. Few children suffer from actual lack of food but many from lack of the proper kind of food. The most frequent results of the above indiscretions are indigestion and constipation with resulting malnutrition. Defective teeth, anaemia and skin eruptions are frequent.

(5) LACK OF DENTAL CARE

All mothers are interested in baby's first tooth and the interest usually continues till the first dentition is complete. After that, however, very little further interest is taken in the teeth and unless the child cries with toothache and disturbs the family, few parents trouble to investigate the condition of their children's mouths.

Professor Hartzell in an interesting article on Mouth Health and the Pre-School Child says, "The idea that because the first teeth are temporary they are in need of no attention and should be left to nature because they will soon fall out anyway is still very general, and in the child of a pre-school age, even among the best classes of people, the teeth are woefully neglected and the results show themselves not only in the pre-school period but when the child goes to school..... While the toothbrush alone is not the solution of the problem of mouth health, yet the lack of its use indicates the general lack of knowledge regarding the importance of mouth health. The "poor little rich children" also have their troubles. The diet in the more well-to-do homes often seems to be not so productive of good teeth as in the orphanages and similar institutional homes." Dr. Hartzell mentions an investigation

on various groups of children made by Dr. Bunting, of the University of Michigan, who found that the poorest dental condition was found in children from well-to-do families and the best condition in certain orphanages where the children had been fed for years on a simple but well balanced diet consisting of an abundance of milk and vegetables and a minimum of sugar and candy.

It is important that the baby teeth should be retained in the mouth as long as possible. They serve for purposes of mastication and assist in the normal eruption of the permanent teeth. If these deciduous teeth are decayed however or if there are abscesses the teeth should be removed in the interests of the child's health. Whenever possible the teeth should be filled and retained.

The most important results of defective teeth are malnutrition, unhealthy tonsils and adenoids and often retarded mental progress.

(6) TYPE OF CLOTHING

The present day fashion in clothing for children as well as adults has much to commend it. The days of "sewing the child in for the winter" have happily departed and on the whole children are now much more simply and suitably clothed.

There is still, however, a tendency on the part of some mothers to cover the child with layers of garments, especially on the chest. These children usually look tired and are often debilitated and subject to frequent attacks of bronchial catarrh. Short socks on cold damp winter days are a too common sight still and likely to prove unwise if the child is under-nourished or subject to colds or rheumatism. Ill fitting boots and shoes at this period may give rise to trouble later in the shape of hammer toe, flat foot, etc.

(7) SLEEP

The minimum amount of sleep for children at different ages should be

1 - 2 years	13 hours
2 - 4 years	12 hours
4 - 5 years	11 hours

If a sufficient amount of sleep is not taken the child's health will undoubtedly suffer. The child from 2 to 5 years is in a constant state of activity and must have definite rest periods to repair the waste which goes on in the body due to this activity. Not only is a certain period of sleep necessary, but the sleep should be taken under the best conditions, viz: in a bed to himself in a quiet well ventilated room

with a sufficiency of light, warm coverings. Loss of sleep results in a peevish condition in the young child. There usually follows loss of appetite, debility and nervous instability.

(8) SOCIAL AND ECONOMIC CONDITIONS

Actual lack of money and unemployment of the father often result in a debilitated condition of the family. Chaplin (H.) in the N.Y. State J. Med., 1928, emphasises the necessity of supervising the health in the children of parents who do not earn sufficient wages, and remarks on the fact that in families where money is scarce the health of the children deteriorates. In this type of home it is frequently the pre-school child who suffers most. The baby, if breast fed, usually thrives and the school children may be kept in a good condition by the provision of free school meals, but the pre-school child has to take what is going. In a large family as soon as he can walk a few steps, the toddler is left more or less to his own devices and his playground is often the gutter. He misses the regularity of the feeds and sleep periods which he enjoyed in his infancy and he tends to go downhill without anyone taking any particular notice of him. Dr. Drever in his book on the Psychology of the Pre-School Child says, "There is a great difference

between being a baby and being a toddler, and sometimes the transition is made far too suddenly, with very little consideration for the feelings and point of view of the dethroned king." In many cases also where the father is unemployed the mother has to go out to work and so the small child gets very little of her care.

At the other end of the economic scale we have the more well-to-do family with probably a solitary child. This type of family often lives in a self-contained flat with no garden. Every attention is lavished upon the child but he misses companionship of his own age because he is not allowed to play in the streets with other children and therefore only gets the fresh air when his mother is able to take him out. At an early age he realises his importance in the household and often becomes introspective and neurotic.

The mental health of the child often suffers badly under poor social and environmental conditions. Dr. Chamberlaine, Director of the Child Guidance Clinic, Minneapolis, in an article on What Constitutes the Health of the Pre-School Child, says, "Mental Health is herein understood to mean the normal condition and functioning of mind and body. It is dependent primarily upon the permanence of those early habits which will assure for one's adulthood stability of

uninjuriously conduct, sustained effort in gainful and acceptable pursuits and satisfying relationship to others" "For the mental health and development of the child rests largely on suggestibility, imitation and curiosity satisfaction. By these channels are the habits of adults, in part, acquired by the child The tone of the voice, the expression of the face, the gesture of the hand of the adult are as vital to the child's mental health, as vital to his ultimate habits as is the temperature, the ventilation, the light and quiet of the nursery."

Emotional disturbances and bad habits are important points to be considered in discussing the mental health of the child. Dr. Huenekens in a paper on The Pre-School Child - with especial reference to its emotional life and habit problems, says :-

"Emotional disturbances, including such habits as tantrum, night terrors, enuresis, speech defects and finger nail biting, may be due to some purely physical disturbance, but may more often be laid at the door of improper training and poor environment The habit problems are important from two distinct stand-points. First, from their effect on the physical life of the child; second from effects discovered later, on the emotional mental and social life of

the school child and adult. There are two outstanding bad habits that have a distinctly bad effect on the body. These are poor appetite and poor sleeping habits." Dr. Huenekens stresses the importance of getting the interest and help of the parents in treating these conditions, and attributes failure to three things, viz: (1) indifferent co-operation on the part of the parents; (2) actual inability of some parents to carry out directions, and (3) insurmountable obstacles in the child's environment. He concludes his article by saying "In the general routine of the physical care of the infant and child it is a simple matter to instruct the parents gradually in the elementary lessons of child psychology. These lessons should be begun when the infant is only a few days old, and must be carried on throughout the child's life by the family medical adviser, whether he is a pediatrician or a general practitioner."

(9) SANITARY CONDITIONS AND OVERCROWDING

Ribadeau-Dumas stresses the importance of atmospheric and climatic conditions in the development of the healthy child. In most of the large towns today lack of proper housing accommodation still persists and overcrowding is a constant factor to be reckoned with. It is not an uncommon thing in Willesden to find five or six living in one room. Lack of proper

ventilation often results in catarrhal conditions and the development of enlarged tonsils and adenoids, which in their turn keep up a vicious circle of catarrhal diseases. In these overcrowded rooms children do not get a refreshing sleep and are often kept awake till early hours of the morning by adult members of the family. Loss of appetite and consequent malnutrition ensue. The want of air and sunlight in the rooms is, as stated above, one of the common factors in the production of rickets and also aids in the spread of tubercular infection. Relaxed throats are common where sanitary appliances are defective and such conditions of the throat predispose to infectious disease. Should infection be brought into these overcrowded houses it spreads rapidly owing to enforced close contact with the sufferer. In this connection the number of school children in the family may have some effect on the health of the pre-school child in so far as they are likely to contract infectious ailments at school and bring them home to the younger members of the family.

Dampness of the rooms predisposes the occupants to rheumatism and in small children the complaint of "growing pains" is too often neglected by the busy mother and the real trouble only discovered in the form of a heart lesion at the first

school medical inspection.

(10) OCCURRENCE OF RHEUMATISM.

The importance of rheumatism in children lies in its dangerous sequel, Heart Disease. The disease occurs rarely before the second dentition but probably although it is only evident after the second dentition, the factors causing it are at work before that age. It is common among the poorer classes but not the very poor. Damp houses, a poorly clad condition and a damp sunless climate predispose to rheumatism. The common manifestations of rheumatism in children are "growing pains", sore throats, myalgia, erythematous rashes, anaemia, nervousness, chorea and cardiac dilatation and pyrexia. The swollen inflamed joints observed in adults suffering from acute rheumatism are rarely seen in children.

(11) ACUTE INFECTIOUS DISEASES

It has been shown above that the mortality rate from acute infections is high during the 2 - 5 period. Also, those children who survive an attack of one of the infectious diseases may be left with very crippling sequelae. The most important infectious diseases likely to attack the infant and pre-school child are :-

(a) WHOOPING COUGH

This disease is specially liable to attack

infants and very young children, quite a large proportion of cases occurring under 6 months of age. Some of the conditions which may be found to follow an attack are cardiac lesions and enlargement of the bronchial glands, which latter condition may give rise to chronic bronchitis and asthma. Rickets occasionally follows Whooping Cough, but the most important sequela is Pulmonary Tuberculosis. This most commonly occurs where the disease has been complicated by a prolonged period of broncho-pneumonia.

(b) MEASLES.

All children are susceptible to this disease but it tends to attack them at a slightly later period than Whooping Cough, most infants under 6 months showing a natural immunity. Tubercle is the most important sequel of this disease also. Dr. Lucas in his little book on the "Health of the Runabout Child", quotes a saying of Dr. Vaughan "Could some effective vaccine for Measles be found it would be a most effectual aid in stamping out Tuberculosis." Eye complications during an attack of Measles if not carefully attended to may result in corneal opacities and impairment of vision. Deafness may result from inflammation of the ears and deaf mutism may be traced back to an attack of measles.

(c) DIPHTHERIA.

This disease is most common between the ages of 2 and 5 years. Infants are usually immune for the first six months of their lives. By the end of the first year about 60 per cent have become susceptible, and during the second year the disease is common. Although untreated diphtheria is still a very serious disease, since the discovery of antitoxin in 1895 it has become a controllable one and as will be shown later it is now a preventable one.

(d) SCARLET FEVER

Infants under one year rarely suffer from the disease. It is common between 2 and 5 years, but the sixth year probably shows the greatest incidence. Deafness and deaf mutism (when the disease has occurred in very young children) are the most important sequelae. Nephritis as a complication may occur with equal frequency after mild and severe attacks. It usually clears up completely however but occasionally chronic Nephritis may develop.

Heart lesions occasionally follow an attack of Scarlet Fever but they have been proved to be not nearly so frequent as was at one time supposed.

(e) SMALL POX.

All ages are equally susceptible to this disease. In pre-vaccination days children suffered most because adults were protected by surviving an attack in infancy. Since the introduction of vaccination in infancy the incidence now falls upon adults whose protective immunity from vaccination has expired. In communities, however, where there is much conscientious objection to vaccination, children are commonly attacked. This was well illustrated during the recent epidemics in Gloucester and Sheffield. Both these towns have a large "Conscientious objections" population and the incidence of Small Pox in children under school age was relatively high.

Deafness and Eye Defects are important sequelae in those who survive the disease.

PERSONAL OBSERVATIONS.

During my seven years experience as School Medical Officer and Medical Officer of a Welfare Centre in Willesden I have found that certain of the above factors already discussed have been more prominent than others in their bearing on the health of the pre-school child. To illustrate my personal observations I have collected notes on one hundred children from my district. Each of these children I have personally examined at the age of five

years at their first school medical inspection. I have noted the defects found, and have traced back the history of each case through the pre-school period to birth. The cases have not been specially selected, except in so far as only those have been chosen for whom I hold reliable records made by the health visitor on her birth enquiry visit and on her routine visits to the home from birth to 5 years. 47 of the cases attended the Welfare Centre during some part of their infancy or pre-school period, and I therefore have my own additional notes made on these visits.

It will be seen from TABLE A that out of the 100 children examined at School Medical Inspection 70 were found to be suffering from defects - 47 from one defect; 20 from 2 defects; 1 from 3 defects; and 2 from 4 defects. The histories of the 100 cases were traced back to birth under the headings shown in the table.

On examination of the histories of these 100 cases under my observation certain factors seemed to be more prominent than others in influencing the health of these children. In TABLE B I have shown the defects, tabulated according to the systems affected, correlated with the most common causal factors.

(1) SOCIAL AND ECONOMIC CONDITIONS.

(a) Employment of the Father.

Out of the 100 histories examined the father was found to be unemployed (and there was actual poverty) in 6 instances. The children from each of these families were found to be defective. In 16 cases the father was irregularly employed, and children from 15 of these families were found to have defects.

(b) Social Conditions.

In the case of 5 children who showed defects the social conditions of the home were found to be unsatisfactory, although the father was in regular employment. It is interesting to note in connection with this factor that in 1926 the Medical Research Council published a Report on "Poverty, Nutrition and Growth", and they came to the conclusion that Maternal Efficiency was the thing that mattered most.

The most common defects attributable to poor social and economic conditions were debility, defective teeth, enlarged tonsils and adenoids and adenitis.

(2) SANITARY CONDITIONS AND OVERCROWDING.

Fifteen families were found to be living under poor sanitary conditions and children from

fourteen of these families presented defects at School Medical Inspection. Fifteen families out of the 100 cases occupied only one room, the average number of occupants being ^{3.4}~~three~~ to four. Children from eleven of these families were found to be defective. The most common defects under this heading were defective teeth, debility and anaemia, worms, and enlarged tonsils and adenoids. Closely associated with bad Sanitary Conditions and Overcrowding is the

(3) OCCURRENCE OF CATARRHAL DISEASES.

I have included such conditions as Bronchial Catarrh, Bronchitis, Broncho-Pneumonia, Tonsillitis, Pharyngitis, and Catarrhal Otorrhoea. The following table shows the incidence of Catarrhs in the 100 cases under my observation.

BRONCHITIS

BRONCHO PNEUMONIA

0 - 2 yrs.	2 - 5 yrs.	0 - 2 yrs.	2 - 5 yrs.
21	6	5	1

TONSILLITIS

CATARRHAL OTORRHOEA

0 - 2 yrs.	2 - 5 yrs.	0 - 2 yrs.	2 - 5 yrs.
9	5	2	1

Fifty cases out of the 100 had suffered from catarrhal conditions at some time during the period from birth to 5 years of age. Of these 50 cases 29 were found to be defective at School Medical Inspection. In 19 cases enlarged tonsils and adenoids had been diagnosed during the pre-school period. In 13 children the defect was still present at the time of the examination and in 6 cases an operation had been performed before the child came to school. Of these 6 cases 3 presented no defects; 1 suffered from anaemia; 1 from debility and 1 from defective teeth.

On looking at the above table of Catarrhs one is rather struck by the much greater number which occur between birth and 2 years than between 2 and 5 years. This point is borne out by some observations on the Catarrhal Child made by Dr. Vertue, M.O., of the Solomons Infant Welfare Centre (Guy's Hospital). A short description of his work appears in Sir George Newman's Annual Report on the State of the Public Health for 1928. He declares that the maximum proportion of Catarrhs occurs in the second year of life and gives the following figures to support his statement.

Year of Life	Number of Cases	Number of Catarrhs	Average per Child
1st	229	606	2.64
2nd	87	270	3.10
3rd	34	90	2.65
4th	14	38	2.71
5th	6	12	2.00

Dr. Vertue attributes the superior resistance to catarrhal conditions during the first year of life to

(1) Breast Feeding

(2) Fresh Air (more important).

Most mothers now-a-days are being educated to the importance of fresh air for the baby and wherever possible allow the child to sleep outside in its pram. This is very little trouble to the mother during the first year of baby's life when he sleeps most of the day and only needs to be roused for feeds and general attention. The second year, however, is not so easy. The child is now toddling and although he can get about by himself he requires to be supervised. The mother cannot get on with her work so well and so he is kept indoors until she is able to take him out. During the third and fourth years the child is becoming more sensible, learns a certain amount of obedience and is more able to look after himself. He is therefore allowed out to play in the fresh air and so the incidence of catarrh falls again.

Dr. Vertue also gives a table classifying Catarrhs according to the amount of fresh air in the homes :-

Amount of Fresh Air.	No. of Cases	Catarrhs	Average per Child
Good	160	291	1.82
Moderate	172	535	3.11
Bad	38	190	5.00

(4) OCCURRENCE OF INFECTIOUS DISEASE.

Of the 100 cases examined at School Medical Inspection 77 had suffered from some infectious disease - 17 had suffered before 2 years of age and 60 suffered between 2 and 5 years. The four infectious conditions known to be most common among pre-school children had occurred in the following proportions :-

50 Children had suffered from Whooping Cough
 42 " " " " Measles
 5 " " " " Diphtheria
 3 " " " " Scarlet Fever

As stated earlier, 70 children out of the 100 were found to have defects at Medical Inspection. 46 of these had suffered from acute infections as follows :-

33 Children had suffered from Whooping Cough
 25 " " " " Measles
 4 " " " " Diphtheria
 2 " " " " Scarlet Fever

PREVENTIVE MEASURES.

From the foregoing remarks I think one is justified in concluding that there are certain factors in the life of the pre-school child which may adversely influence the state of his physical and mental health. This being the case, our attention must next be turned to a discussion of how these factors can be controlled. In the prevention of disease in children there are two objects to be aimed at, viz:

(1) The removal of causes interfering with proper growth and development.

(2) The prevention of infection.

The first depends upon the education of the medical profession and the public. The second depends on legislation as well as on professional and public education.

It will be convenient to detail methods of prevention under the same headings as were used when discussing the factors influencing the health of the pre-school child.

HEALTH OF THE EXPECTANT MOTHER

At the present time there is no legislative measure making pregnancy notifiable and no expectant mother can be forced to submit herself to ante-natal

examination. The public, therefore, must be educated as to the necessity for this ante-natal care in the interests of both mother and child. Propaganda may take the form of articles in the press, advice from the family doctor, talks by nurses, health visitors and medical officers in charge of infant welfare centres. Ante-natal examinations now play an important part in the curriculum of the medical student and midwife. Older practitioners, who had no opportunity of instruction in this branch of obstetrics during their student days are now realising the importance of keeping themselves up to date if they wish to retain their patients. Eventually it is hoped that every expectant mother in the country will come to look upon ante-natal examination as her right.

Municipal Ante-natal Clinics are now established by almost every local authority and all the large maternity hospitals and many of the general hospitals have their ante-natal departments. Dental clinics are provided for treatment of expectant mothers and for those suffering from venereal disease facilities for treatment are supplied by venereal disease clinics or special departments attached to the general hospitals.

ATTENDANCE AT CONFINEMENT AND TYPE OF BIRTH

The training in obstetrics in the Medical Schools is now considerably improved and the newly

qualified practitioner of today is much better able to cope with the difficulties of this branch of medicine than was his older colleague at the same stage twenty years ago. Quite a high standard of knowledge is now expected from candidates for the C.M.B. Certificate and rules and regulations for practising midwives have been considerably tightened up. Every effort must be made to get rid of the handy-woman. Unfortunately, even yet, she is still "covered" by certain doctors and she will not entirely disappear from our midst until every doctor refuses to attend a patient who is not being nursed by a trained midwife.

Arrangements should be made by every local authority for the provision of a certain number of beds to be used by mothers whose confinements are likely to be complicated or whose home conditions are unsuitable.

In many areas now a Consulting Obstetrician engaged or paid by the Local Authority is available by general practitioners for cases of difficult labour.

TYPE OF FEEDING

Welfare Centres and Health Visitors have probably the most influence with the mother on this subject. It is most important that the Health Visitor should be efficient. Besides possessing tact and a kindly manner she should have certain definite qualifications. It is I think desirable that besides being

qualified as a General Nurse she should also hold the C.M.B. Certificate and the Health Visitors' Certificate.

Medical Officers in charge of Welfare Centres should have special experience in diseases of children. Dr. McCord in an article on Physical and Mental Fitness of Children which appeared in the Medical Review of Reviews for 1927 says, "Beyond any doubt the greatest problem of today confronting the doctor who treats children is that of the child's diet or nutrition. Every physician should read and become well informed on foods and food values and then as he visits the various homes or as the little ones are brought to his office he should properly instruct the mothers on the matter of diet in health as well as in disease. Such an educational propaganda would mean much to those of school age as well as to the unborn and the rising generation of the pre-school age."

Breast feeding should of course always be encouraged when suitable but in the event of a mother being unable to feed her child she should be able to purchase dried milk and infant foods at a reduced price at the Centre. It is often said that many mothers only attend a centre because there they can buy food more cheaply. This may be so, but so long as they are buying the food the child is perforce kept under the supervision of the medical officers and so in this way

any departure from the normal in the child's health may be detected at an early date.

Cow's milk forms a very large proportion of the young child's diet, a minimum of a pint a day probably being a desirable quantity. Unfortunately, this article of diet is only too often the cause of tuberculosis in children. Dr. Lucas in his book on The Health of the Run-about Child says - "One cow with tuberculosis in a dairy herd does more damage to little children in one morning's delivery of milk than can be undone in any one life time." The public should be encouraged to demand clean milk from tuberculin tested cows. Close inspection of farms and dairies is necessary by the authorities, and all persons handling milk should be tuberculin tested. In the article already mentioned above by Dr. McCord, the author sounds a note of warning on the dependence on "Certified Milk". He says, "Parents should always endeavour to get clean milk and keep it iced, but I advise against running off after so-called "Certified Milk". I have no fight to make on this milk except that much of this so-called certified milk is not entitled to that rating. Then again many parents seem to think if they use certified milk no further precautions are necessary. As a result much harm is done by depending too much on the claimed safety of this milk. Certified milk can become just

as dangerous as any other liquid milk if not properly handled and kept cold."

In the British Medical Journal for February 22nd, 1930, there appeared a short article on an interesting milk testing experiment which was inaugurated at Hamilton, Lanarkshire on February 15th of this year. The experiment is to serve the double purpose of testing the value of milk as a food for growing children, and at the same time to relieve distress in Lanarkshire. From February 17th until the schools close in July 10,000 children are to receive a ^{daily} ration of $\frac{3}{4}$ pint of Grade "A" tuberculin tested milk. 5,000 children are to receive it raw and 5,000 after it has been pasteurised. The children will all be weighed and measured and another 10,000 children, receiving no milk, will be used as controls. The investigation is under the control of the Department of Health for Scotland and the Lanarkshire Education Authority. An increased consumption of milk would certainly benefit Agriculture, and it is hoped that by popularising tubercle-free milk surgical tuberculosis might eventually be eradicated.

DENTAL CARE.

Mothers should be advised to start the child very early in good dental habits. As soon as the teeth erupt they should be carefully cleansed at intervals from all food stuffs and children should be

taught to masticate as early as possible. Prof. Hartzell in his article on Mouth Health and the Pre-School Child says - "Chewing cleanses teeth and reduces decay. Remember, mouth digestion is more important to the young child than the adult, because his first food after milk is starch, which can be digested in the mouth, while the stomach has no power to digest it."

Dental Clinics should be available for the inspection and treatment of pre-school children.

SLEEP, CLOTHING AND GENERAL HYGIENE.

Advice on these matters can usually be advantageously given at Welfare Centres and by Health Visitors in the homes. In connection with many centres there are now established Mothercraft Classes. At these classes mothers are given general instruction by a nurse in matters of hygiene; they are assisted with the cutting out and making of garments for the children, and they are able to purchase wools etc., at a reduced price. At the centre at which I work the medical officers take it in turns to give short talks to the mothers attending these classes. The talks are simple and deal with conditions affecting the health of the child, e.g., how to maintain breast feeding; how to purchase good

food and prepare a suitable diet; constipation in children, etc., etc. Mothers are also given advice on the care of physically defective children on lines laid down by Dr. John Thomson in the 4th Edition of "Clinical Study and Treatment of Sick Children". Two other books which might with advantage be read and followed by Medical Officers giving these talks are :-

Elliot (R.H.) Health in Children - 5 Lectures
& others. and

Weston (M.E.) Healthy Childhood between
Infancy and School Age, 1925.

The interest of the mothers in these classes and lectures is maintained by setting a little voluntary examination paper at the end of each year. Sewing and knitting competitions are also held and small prizes are awarded.

SOCIAL AND ECONOMIC CONDITIONS

A discussion on unemployment problems is beyond the scope of this thesis. To improve the efficiency of the mother, however, should be one of our aims. It is most important that all girls about to leave school should be instructed in housewifery and general hygiene. The majority of girls from the working classes marry at an early age and it is pathetic sometimes to see the helplessness of those

entrusted with the care of a home and young children. Here again much can be done by the Health Visitors and the Welfare Centre towards educating the mother and more use might be made of public lectures and film displays in showing the parents what an evil effect bad environment has on the health of the child. Under bad social conditions the mental health of the child often suffers as much as the physical health. Child Guidance Clinics are now established in many parts of the United States of America, and are gradually being thought about in this country, although they are not yet by any means universal. Dr. W. Shirley Wynne in an article on 'The Extent to which Health Departments are justified in maintaining Free Mental, Dental, Postural and Nutritional Clinics for the Pre-School Child' says - "I would like to see Mental Hygiene an important function of the Health Department. The number of mental defectives and the number of neuropathic and psychopathic persons in our communities have increased. If we have the facilities to do the preventive work with the pre-school child; if we maintained free clinics for mental hygiene where children inclining towards peculiar behaviourism could be studied, we would be given a wonderful opportunity to adjust them to their environment and eventually to start them out toward adulthood unhandicapped by mental illness."

It is interesting to note that as far back as 1904 Dr. John Thomson of Edinburgh opened a clinic for mentally defective children under the auspices of the Royal Hospital for Sick Children. To this clinic all types of children were brought, many of them showing conduct problems and the clinic was really, although not in name, a child guidance clinic for a selected group of exceptional children. When Dr. Thomson died in 1926 the clinic was carried on by Dr. Charles McNeil. In 1925 Dr. Drever, Combe Lecturer in Psychology in the University of Edinburgh, opened a clinic to which any child offering problems of conduct or of educational or mental retardation might be brought.

SANITARY CONDITIONS AND OVERCROWDING.

Overcrowding in many of the large towns is in part due to people flocking in from the country to find work and there is still much to be done by Housing Committees before the population in the towns can be adequately catered for. The high cost of building materials and labour keeps rents high and many families living in overcrowded conditions are quite unable to pay the money for these new homes. Local Authorities have for the past few years been building houses (subsidy houses) for the building of which the Government pays a certain proportion of the cost. These

houses are let to people at a rent commensurate with their wages.

Until better conditions can be brought about, however, some temporary expedient must be tried in order to guard the health of the young children in these unsuitable surroundings. Communal nurseries or playgrounds might be considered by a certain number of families clubbing together, but the most satisfactory solution of the problem would seem to be the universal establishment of Nursery Schools on the lines of the Rachel Macmillan Schools at Deptford. As far back as 1908 a Consultative Committee of the Board of Education issued a Report in which they arrived at the conclusion that the best place for children whose home conditions were unsatisfactory was the Nursery School. In 1918 sixty-four Nursery Schools with a roll of 1500 children were recognised by the Board of Education, and between July and December 1929 nine more schools were put under construction. In the House of Commons recently Sir Charles Trevelyan stated in reply to a question by Mr. Thomas Griffiths that the average cost of providing a new Nursery School on the basis of a number of recent experiments was £34 per place. It will be seen therefore that the universal establishment of Nursery Schools would mean a large initial outlay but this would be amply justified by the improved condition of the

children's health, and probably a large sum of money would be saved by the School Medical Service in treating defects between 5 and 15 years.

Children are admitted to these schools between the ages of 2 and 5 years. They are regularly fed and bathed and taught and provided with a sufficient amount of fresh air. Apart from the beneficial effect on children from poor homes, the solitary child from the better class home receives as much benefit. He is provided with suitable companionship under ideal conditions during the most impressionable years of his life. These schools would also serve as a suitable place for routine medical inspection of children at the ages of 2, 3 and 4 which is so desirable.

Where it is not possible to establish Nursery Schools, special departments in the ordinary Infant Schools might be set aside for the reception of these children.

In some areas Day Nurseries are available for the use of the working mother. She may take her child there when she goes to work in the morning and he is carefully looked after by competent assistants in hygienic surroundings until she is able to call for him again in the evening or when she has finished her work.

OCCURRENCE OF RHEUMATISM.

It is most desirable that some means should be found by which Rheumatism in the child may be controlled and its dire sequel, Heart Disease, either prevented or ameliorated.

Climatic conditions cannot be altered but artificial sunlight clinics can be established by local authorities.

A very comprehensive scheme for the control of Rheumatism has been created in New York by the New York Heart Association, and in many places in our own country various schemes have been set on foot to deal with the condition. The underlying principle of all these schemes is the Rheumatic Supervisory Centre or Clinic. The Chief Medical Officer of the Board of Education in his Annual Report for 1926 points out that the function of this clinic is to act as "a place for diagnosis and a sorting house where the total facilities of a district may be brought to bear upon the child in need of them. It is not a treatment centre for Rheumatism or Heart Disease. It is an institution for catching the early case of Rheumatism and ensuring that it obtains its treatment and regimen elsewhere."

A recent Commission of the British Medical Association recommended the following preventive measures :-

- (1) Notification.
- (2) Supervision by School doctor and private practitioner.
- (3) Rest Homes.
- (4) Housing Reforms.
- (5) Education of parents as to seriousness of the disease and its prevention, e.g., the inadvisability of trying to harden children by cold baths; careful watch out for "growing pain", myalgia, synovitis, erythemata, nervousness and chorea.

At a discussion on the Cure and Prevention of Rheumatism in Children held at the Edinburgh Medico-Chirurgical Society on 3rd July 1929, Professor Leonard Findlay expressed disappointment in Cardiac Clinics; Dr. C. McNeil considered it important for the period of Hospital detention in rheumatic cases to be longer than 3 months; Professor W. J. Ritchie pointed out that "the respective death rates from Rheumatic Heart Disease and Tuberculosis of the Respiratory System were probably represented by a ratio of 2 - 3, yet the problem of Rheumatism did not receive adequate consideration and care and that the public expenditure on prevention and treatment of Rheumatism was negligible by contrast with the expenditure on Tuberculosis."

ACUTE INFECTIOUS FEVERS.

The most important fevers liable to attack the pre-school child are Measles, Whooping Cough,

Scarlet Fever, Diphtheria and Small Pox. As these fevers are all more or less preventable it will be useful to discuss the methods of prevention somewhat in detail.

First of all the public must be educated to realize the grave importance of these fevers in the young child. Not only is the death rate from these fevers in children under 5 years very high, as shown in a previous table, but those who recover are liable to suffer from disabling sequelae. Propaganda should be strenuously carried on through the press, by private doctors, nurses, health visitors, and Medical Officers in charge of Welfare Centres. Mothers must be made to realize the risk of putting young children in contact with others suffering from the disease so that they may "get it all over together".

Legislation plays a considerable part in the control of infectious diseases. The Notification of Infectious Disease Act makes Diphtheria, Scarlet Fever and Small Pox compulsorily notifiable. In some areas Whooping Cough is made notifiable and from time to time Measles has been added to the list by certain local authorities. The compulsory notification gives an opportunity to an officer of the Public Health Department to visit the home and advise measures likely to limit the spread of infection.

MEASLES.

From time to time this disease has been made notifiable in certain places, e.g., Edinburgh and Aberdeen, but in both places it was given up after a short trial because the results obtained did not appear to justify the money expended. The failure of notification in limiting the spread of the disease is due to the fact that it is the catarrhal stage which is the most infectious, and before a definite diagnosis can be made much infection has probably been disseminated.

Very few fever hospitals admit cases of measles and indeed provision of beds for every case of this widespread disease would be very costly without materially limiting the spread of infection. It is most important, however, that a certain number of beds should be available for complicated cases or cases where the home conditions are unsatisfactory.

Much work has been done of late on the subject of serum prophylaxis. It has been found that a temporary immunity lasting 3 or 4 weeks may be produced in a person who has been exposed to the disease by the injection of serum from a convalescent patient. The morbidity of this disease is said to decrease with every year of age; therefore the above method of prophylaxis is very useful where we specially wish to protect an infant or a delicate

child from an attack for as many years as possible. If the serum is given later than the first five days of the incubation period the disease will probably not be prevented but the severity of the attack will be greatly modified, and this modified attack produces an immunity as permanent as an ordinary attack. It is interesting to note that in the death returns for Edinburgh for 1929 it is stated that no single case of a measles death has been recorded since July 1928.

WHOOPIING COUGH.

This disease like measles is most infectious in the catarrhal stage. It is questionable if notification is of much avail but probably it gives Authorities some control over the disease. It has been advised that during times of epidemic children suffering from febrile catarrh should be isolated, and if a blood examination could be carried out for these children an aid to diagnosis might be found. From the onset of the disease the blood shows a characteristic relative and absolute increase of lymphocytes. This wholesale examination of bloods, however, would probably only be practicable in an institution.

Hospital treatment is particularly desirable in cases showing complications.

Much work on vaccine immunisation has been done by workers, notably by Huenekens and Shaw, and it is now believed that these vaccines may be of considerable value if given in the incubation period. Certainly the disease, if not prevented, may be modified. The above workers advocate large doses, and it is only since the introduction of these large doses that much progress has been made.

DIPHTHERIA.

Compulsory notification and Hospital isolation do much to limit the spread of this disease. The treatment of the "carrier" is also an important matter. Many different forms of treatment have been tried to rid the carrier of his germs but none of them seem to prove very efficacious. In throat carriers removal of tonsils is probably the most satisfactory treatment. Nasal cases are more difficult to treat but occasionally may be dealt with successfully by nasal douches. Dr. C.B. Ker in his book on Infectious Diseases advocates the detention of carriers in hospital for at least 12 weeks, after which time the virulence of the germ is tested on small animals. Should the bacillus prove avirulent the patient is discharged.

We have now, however, at our command a

process by which the susceptibility to Diphtheria of any individual may be tested, and a process by which such an individual, if he prove susceptible, may be rendered immune for a considerable number of years or perhaps permanently. The processes referred to are the Schick Test and the Immunisation by toxin-anti-toxin mixture.

SCHICK TEST.

This test consists of the intra-dermal injection into the left forearm of .2 cc. of a standardised diluted diphtheria toxin. Into the right arm is injected the same amount of diluted toxin which has been heated. This is the control. Four reactions are possible :-

(1) Positive

<u>Left Arm</u>	<u>Right Arm</u>
Circumscribed area of redness $\frac{1}{2}$ -1 in diameter.	Nil.
Appears in from 24 - 48 hours.	
Reaches maximum intensity on 4th day.	
Gradually fades, leaving desquamation and pigmentation.	

(2) Negative

<u>Left Arm</u>	<u>Right Arm</u>
Nil.	Nil.

(3) Negative & PseudoLeft Arm

Area of redness in 24 hours.

Fades quickly.

No desquamation and little pigmentation.

Right Arm

Same as left arm.

(4) Positive & PseudoLeft Arm

Large area of flushing

Followed by desquamation and pigmentation.

Right Arm

Red flush with deeper centre.

Fades quickly.

Persons showing reactions 1 and 4 are susceptible and should be immunised.

Children between the ages of 6 months and 5 years of age are in the majority of cases susceptible and rarely give pseudo reactions. It is, therefore, reasonable to dispense with the Schick test during this period and proceed to immunisation. Three injections of 1 cc. of toxin anti-toxin are usually given at weekly intervals. Immunity is usually found to be complete by the end of 12 weeks or sometimes earlier. It seems probable that the immunisation thus produced is permanent.

The above process of active immunisation takes time for results to be obtained and in cases where it is necessary to deal immediately with an

individual who has been exposed to infection, the production of passive immunity is the best course. It consists in the injection of antitoxic serum (usually 500 units). The protection confirmed becomes efficient in about 24 hours and probably lasts for about 3 weeks.

SCARLET FEVER.

As in the case of Diphtheria it is now possible to test the susceptibility of individuals to Scarlet Fever and to immunise those showing a positive reaction.

DICK TEST.

This consists of the intro-cutaneous injection into the left forearm of .2 cc. of a diluted filtrate obtained from a broth culture of the *Streptococcus Scarlatinae*. As a control .2 cc. of the same toxin which has been heated is injected into the right forearm. As is the case with the Schick test, four reactions are possible, viz: (1) Positive, (2) Positive and Pseudo, (3) Negative, (4) Negative and Pseudo. Persons showing reactions 1 and 2 are susceptible and should be immunised. It differs from the Schick test in that the reaction comes on in from 4 to 12 hours and reaches a maximum in 24



hours. It fades quickly, and is very rarely followed by desquamation or staining.

Three subcutaneous doses of toxin are given at weekly intervals in order to produce an Active Immunisation. The dosage most commonly used is 500, 2,000 and 10,000 skin test doses. The immunity so produced is established in about 2 or 3 weeks and probably lasts for some years.

When dealing with actual contacts of a case of Scarlet Fever the production of Passive Immunity should be established. This consists of injecting intra-muscularly 2.5 cc. of a concentrated Anti-Streptococcal Serum. Immunity is produced in about 24 hours and lasts for 2 or 3 weeks. If this method has been used some weeks should be allowed to elapse before Active Immunisation is carried out.

SMALL POX.

At the present time Small Pox is prevalent in many parts of the British Isles and unfortunately there is still much feeling against vaccination. In consequence there are many hundreds of unvaccinated children in our midst. The following arguments in favour of vaccination would seem fairly conclusive of its advisability :-

(1) Since the introduction of vaccination there has been a marked fall in the mortality from

Small Pox.

(2) Vaccinated persons suffer in a smaller proportion than unvaccinated persons.

(3) Mortality is less in vaccinated persons.

(4) Severity of attack is greater in unvaccinated persons.

(5) Age incidence has changed since the introduction of vaccination.

(6) Good results from revaccination. In Germany, where revaccination is enforced, Small Pox is almost unknown.

During the last few years there have been several deaths following recent vaccination, and these deaths have been attributed to Encephalitis. In July 1928 The Medical Research Council issued a report in which they made certain suggestions likely to diminish the risks resulting from vaccination. Among these suggestions they advocate that only one insertion with as little trauma as possible should be made instead of the usual four, although multiple insertions should be available for those who wish them. Primary vaccination should be performed between 2 and 6 months and revaccination should be offered to children entering school (5 - 7 years) and to those about to leave school (14-16).

In reviewing the above methods of prevention, the three most useful suggestions for the protection of health of the pre-school child are probably the following :-

- (1) THE SYSTEMATIC ROUTINE EXAMINATION
OF PRE SCHOOL CHILDREN at the ages
of 2, 3 and 4 years.

Emerson in an article on Health Diagnosis in Children says - "The intelligent programme used for the first year of life is one of the greatest achievements of modern medicine. The infant has been rescued from those negative inadequate methods still characteristic of our care of the later growing years. After the first year of life our health intelligence fails to function. The child is left more or less to chance and if he survive the contagious diseases and other mishaps of the pre-school period he is admitted to school, where regardless of the degree of his physical ^{un}fitness provided he is not sick, he is expected to meet the requirements for children who are really well."

Dr. McPhedran in a paper on the Pre-School Child stresses the importance of parents having their children periodically examined by the doctor, but he says that they are likely to be deterred from doing so by two things :-

- (1) That they may be laughed at.
- (2) The increased expense.

"The second reason", says Dr. McPhedran "is a real stumbling block. The layman fears added expense and the physician is afraid to ask his patients to present themselves and their children for examination lest he be accused - and he will be - of feathering his own nest. To the layman may it be said with assurance that the comparatively small outlay in periodical examination of all members of his family will pay him ten times over as defects and diseases can both be detected and treated early and in most cases cured."

Dr. E.N. White in an article on the Health Education for the Pre-School Child agrees with the views of Emerson.

- (2) THE UNIVERSAL PROVISION OF NURSERY SCHOOLS.
- (3) THE PREVENTION OF INFECTIOUS DISEASE BY
THE BETTER EDUCATION OF THE PUBLIC
regarding the seriousness of Acute
Infectious Disease in Young Children, and
the MORE EXTENSIVE USE OF PROPHYLACTIC
INOCULATIONS.

S U M M A R Y.

The health of the child is well supervised by the Authorities during the ante-natal period; at

birth; from 0 to 2 years, and from 5 - 15 years. There is a gap between 2 and 5 years during which the Pre-School Child receives very little attention from the Authorities. This period is very important owing to the high mortality from certain diseases.

THE CHIEF FACTORS INFLUENCING THE HEALTH OF THE PRE-SCHOOL CHILD are :-

- (1) Health of the Expectant Mother.
- (2) Type of Birth.
- (3) Attendance at Birth.
- (4) Type of Feeding.
- (5) Lack of Dental Care.
- (6) Sleep.
- (7) Clothing and General Hygiene.
- (8) Social and Economic Conditions.
- (9) Sanitary Conditions and Overcrowding.
- (10) Occurrence of Rheumatism.
- (11) Acute Infectious Diseases.

PERSONAL OBSERVATIONS

In tracing back the history of 100 School entrants under my personal observation the factors I found to have most influence on health were :-

- (1) Social and Economic Conditions.
- (2) Sanitary Conditions and Overcrowding.
- (3) The Occurrence of Catarrhal Diseases.
- (4) The Occurrence of Acute Infections.

PREVENTIVE MEASURES.

The chief aims should be :-

- (1) Removal of causes interfering with growth and development.
- (2) Prevention of Infection.

Preventive Measures under the following headings should include :-

HEALTH OF EXPECTANT MOTHER

Better education of the public re the necessity for ante-natal care.

Provision of Ante-Natal Clinics.

" " Dental Clinics.

" " Venereal Disease Clinics.

Better instruction of midwives and medical students in ante-natal care.

ATTENDANCE AT CONFINEMENT AND TYPE OF BIRTH.

Better training in Obstetrics for Medical Students.

High standard for C.M.B. Certificate.

Strict rules and regulations for midwives.

Abolition of the handy-woman.

Services of Consulting Obstetrician should be available for general practitioners.

Provision of Municipal Maternity beds for certain cases.

TYPE OF FEEDING.

Welfare Centres)	To
Health Visiting Service)	give
	:	advice.

Encouragement of breast feeding.

Facilities for buying suitable substitutes for breast milk, if this fail, at the Centres.

Use of sufficient supply of Cow's Milk to be encouraged in child's diet.

Public should be encouraged to demand clean tuberculin-free milk and cautioned how to use it.

Strict inspection of farms and dairies.

Education should be given to mothers re the necessity for a well-balanced diet during the pre-school period.

DENTAL CARE.

Dental Clinics for inspection and treatment of pre-school children.

Education of mothers on how to look after the children's teeth and the importance of having decayed baby teeth attended to.

SLEEP, CLOTHING and GENERAL HYGIENE.

Advice to be given at Welfare Centres and by Health Visitors.

Provision of Mothercraft Classes.

Teaching of hygiene to girls about to leave school.

SOCIAL AND ECONOMIC CONDITIONS.

Mothercraft Classes.

Teaching of hygiene in schools.

Advice at Welfare Centres and by Health
Visitors.

Propaganda by lectures and film displays.

Provision of Child Guidance Clinics.

SANITARY CONDITIONS and OVERCROWDING.

Increased efforts of Housing Committees
to supply houses at reasonable rents.

Establishment of Communal Nurseries or
Playgrounds.

Provision of Nursery Schools where children
may be medically inspected periodically.

Provision of Day Nurseries for the use of
working mothers.

RHEUMATISM.

Provision of Artificial Sunlight Clinics.

Provision of Rheumatic Supervising Centres.

Better education of the public as to the
seriousness of the disease and what abnormal con-
ditions should be watched for.

Notification.

Rest Homes.

Better Housing Conditions.

Prolonged detention in Hospital of Rheumatic cases.

ACUTE INFECTIOUS DISEASES.

Compulsory notification where effective.

Hospital isolation for certain conditions.

Provision for pre-school children to be Schick and Dick tested and immunized if necessary.

Primary vaccination at 2 - 6 months.

Revaccination should be offered at the age of school entrance.

Education of the public as to the importance of these diseases - especially as regards their fatality in the young child and the disabling sequelae.

I personally consider the outstanding methods of guarding the health of the pre-school child to be :-

(1) Routine Systematic Medical Inspection at 2, 3 and 4 years of age.

(2) The Universal Provision of Nursery Schools.

(3) Prevention of infection by the better education of the public and the wider use of prophylactic inoculations.

(4) Local Authorities should be impressed with the importance of the 2 - 5 age, which in my

experience as shown by this thesis is the most important period of life in the pre-school child, and yet is the period during which children receive the least supervision by the Authorities.

... ..

BIBLIOGRAPHY.

Page

1. Circ. 1054 (Ministry of Health) and Circ. 1405,
(Board of Education). 5th December, 1929.
12. Mills (H.B.) The Normal Infant and Child.
Medical Journal and Record 1926: 123. 99-103.
13. Hartzell (T.B.) Mouth Health and the Pre-School Child.
Trans. Amer. Child Health Association. 162-171.
16. Chaplin (H.) Supervision of the Health of the
Pre-School Child. Its relation to the Earning
Capacity of the Wage Earner.
N.Y. State Journal of Medicine, 1928: 28. 20-22.
16. Drever (J.) & Drummond (M.) The Psychology of the
Pre-School Child. Chap. V. p. 110.
17. Chamberlaine (H.E.) What Constitutes Mental Health
in the Pre-School Child.
Trans. American Child Health Association, 1929: 156-162.
18. Huenekens (E.T.) The Pre-School Child. With Special
Reference to his Emotional Life and Habit Problems.
Journal of American Medical Association 1925. 85. 481-484.
19. Ribadeau-Dumas. Due rôle de l'air, la lumière, le soleil,
les climats, dans le développement de l'Enfant.
Presse Médicale 1928. 69. 216-9.
22. Lucas (W.P.) The Health of the Run-about Child.
26. Medical Research Council Report, 1926, on Poverty,
Nutrition and Growth.
28. Newman, Sir George. Annual Report on the State of the
Public Health for 1928.
34. McCord (M.M.) Physical and Mental Fitness of Children
of Pre-School Age. Medical Review of Reviews 1927. 33.
pp. 370-374.
36. British Medical Journal, February 22nd, 1930. Account
of Investigation by the Department of Health for Scotland
and Lanarkshire Education Authority into the Value of
Milk as Food for Growing Children.

BIBLIOGRAPHYPage

38. Thomson, J. Clinical Study and Treatment of Sick Children. 4th Edition. page 48.
38. Elliott (R.H.) and Others Health in Childhood. Five Lectures. 1925.
38. Weston, (M.E.) Healthy Childhood between Infancy and School Age. 1925.
39. Wynne (S.W.) The Extent to which Health Departments are justified in maintaining free Mental, Dental, Postural and Nutritional Clinics for the Pre-School Child. Trans. American Child Health Association, 1927. 171-177.
41. Consultative Committee of the Board of Education Report, 1908.
Chief Medical Officer of
43. Board of Education Annual Report, 1926. p. 61.
48. Ker Dr. C.B. Infectious Diseases. p. 457.
53. Medical Research Council Report, July 1928.
54. Emerson (W.R.P.) Health Diagnosis in Children. American Journal of Medical Society, 1926. Chap. XXI: pp. 707-714.
54. McPherdan (H.) The Pre-School Child. Canadian Medical Association Journal, 1929. 15 20. pp. 659-661.
55. White (E.N.) Health Education for the Pre-School Child. Trans. American Child Health Association, 1927. 58-64.